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PREDICTION OF REENLISTMENT.(U)
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In view of the highly technical nature of Air Force operations and the large number of technicians involved, the Air Force could save considerably in manpower and dollars if turnover could be reduced. It is well known that large numbers of airmen fail to remain in the Air Force after their original enlistment. This low reenlistment rate appears to be particularly critical in those career fields which require long training periods. If airmen with a reenlistment potential could be funneled into the more critical jobs, a significant savings would ensue. In this report some preliminary results based on readily available data that are pertinent to the problem of prediction of reenlistment are presented.

Problem

By analyzing differences between a group of first term reenlistees and a comparable group of non-reenlistees, several questions about the characteristics of these two groups can be answered. How do reenlistees and non-reenlistees compare on aptitude and demographic characteristics? How well can reenlistment be predicted by data available at the time of career classification? Is there any relationship between reenlistment and career preferences and career recommendations at the time of basic training? Partial answers to these questions are provided in this paper.

It must be recognized that reenlistment is a very complex criterion to predict. There are undoubtedly many factors besides the psychological characteristics of the individual which influence the decision to reenlist. Many of these things are dependent upon conditions external to the individual and unpredictable at the time of his entrance into the Air Force. For example, the kind of job he can get in civilian life must be a factor and this depends on employment conditions at the time he gets out of service. Many airmen marry and have children while they are in service, and so the military benefits for dependents must also be a consideration in the decision to reenlist. But this circumstance cannot be accurately predicted at time of entrance.

The Sample

The sample was collected by sending to the Statistical Services Section, HQ, USAF, cards of all airmen who were tested at Lackland AFB on entry in the Air Force between 31 May 1949 and 1 February 1950. Some 30,000 cards were forwarded; of these 9,371 were identified--7,306 non-reenlistees and 2,065 reenlistees. Why only about 30 per cent of the sample were positively identified as either reenlistees or non-reenlistees is not known. Since the overall reenlistment rate for this period is estimated to be about 23 per cent and the reenlistment rate for this sample is 22 per cent, it has been assumed that there is no essential bias in the identified sample. Certain characteristics of the world situation, however, must be kept in mind in considering the sample. All of these men enlisted in the Air Force prior to the Korean War and at a time when draft calls were relatively light. Similarly all of these men

were eligible for discharge after the armistice had been signed. It seems that this group had a somewhat higher intrinsic motivation to join the Air Force than those who came in under greater pressure from the war. This pre-Korean group would be expected to be more similar in this respect to airmen currently enlisting than to those enlisting during the Korean War when being drafted into a fighting army was more imminent.

Results

Data were available on the AFPT-3 cards and AFPTRC record cards on aptitude, biographical scales, rank, skill level, and AFSC at the time of reenlistment or discharge. In Table 1 are the distributions of Aptitude Index scores made by the two groups on entrance into the Air Force. In general there is a tendency for the non-reenlistee group to have a few more very high stanines and the reenlistee group to have more lower stanines. These differences, however, are not large. While more of the very best do not remain in the Air Force, the average scores of the two groups are not far apart.

In Table 2 are the distributions of rank for the two groups at the time of reenlistment. Here higher rank is definitely associated with reenlistment.

In Table 3 are the two groups compared on army area of enlistment. The highest reenlistment rates are associated with Areas III and IV, the Southeast and South Central.

Table 4 gives the reenlistment rates for the various AFSCs where the number of cases is large enough to lend some significance to the comparison of the two groups. The highest reenlistment rate (27 per cent) occurs in the Food Service and Clerical career fields, the lowest (15 per cent) in the Electronics Technician career field.

Two methods were used to construct special Attitude Survey and Biographical Index keys to predict reenlistment. In one method, items were selected which showed a significant pattern of differences between reenlistees and non-reenlistees. In the other method, items were selected on the basis of their statistical significance in the item analysis. In both methods, the items were selected on one sample and cross validated on a second sample. Because the criterion was considered to have a discrete rather than a continuous distribution the point biserial correlation coefficient was used to indicate the relationship between score on the key and reenlistment.

Table 5 gives the correlations between the attitude survey keys and between two biographical keys and reenlistment. The correlations are low, but, in general, statistically significant. In view of the highly complex characteristics of the criterion and the long time interval between the predictors and the actual reenlistment, these correlations may be considered encouraging.

Table 6 gives the correlations of demographic, aptitude, and service variables with reenlistment. Rank is positively correlated with reenlistment, while aptitude is negatively correlated. Fortunately aptitude, which is negatively predictive, does not predict reenlistment as well as attitude and biographical scores do.

Early in the basic training period airmen are shown a chart describing Air Force jobs and asked to select a first, second, and third choice for the job they would like to have in the Air Force. For a sample of 300 reenlistees and 300 non-reenlistees, 182 were assigned to the job for which they expressed first choice while the remaining 418 were assigned to some other job that might be the second or third choice, but was not their first choice. Table 7 shows that the reenlistment rate is practically the same for those who got their first choice as for those who did not. Hence agreement between choice and assignment is apparently not a factor in reenlistment. Also shown in Table 7 are the reenlistment rates for men who were assigned to the jobs which the career counsellor listed as his first recommendation and for men who were assigned to jobs which were not those first recommended by the counsellor. The "does not agree" category includes men assigned in the area of the counsellor's second, or third recommendation as well as those whose assignment does not fall within any of the recommended areas.

(who enlisted between 31 May 1949 and 1 February 1950.

Summary

The relationship of aptitude, attitude, biographical data, army area, rank, AFSC, and job preference to reenlistment was examined in a sample of some 9,000 airmen. Low but generally significant relationships were found. On the basis of these results, reenlistment appears to be more likely to occur when attitude toward the Air Force and interests and background are favorable, when aptitude is not too high, when the men come from the south rather than the north, and when rank at the end of service is high. Agreement between job preference and job assignment seems to have no relation to reenlistment.

Work in Progress

If the variables examined in this study were independent of each other, prediction of reenlistment could be improved by combining them. The small contribution of each variable would thus add something to the prediction. On the other hand, and this seems more likely, if the variables are intercorrelated, some may make no independent contribution, and an index of reenlistment composed of all variables may be little better than any one variable at predicting reenlistment. This will be investigated in a later study.

Since attitude toward the Air Force was found to be one of the more promising predictors, further studies are being made of attitude over a range of time. This will permit comparisons of the attitudes of samples

of airmen who enlisted before the Korean War, during Korean hostilities, and after cessation of hostilities. Those who enlisted during hostilities might be expected to have been motivated more by fear of being drafted into a fighting army than by intention to find a career in the Air Force.

Further studies will also include other measures of socio-economic status and interest.

Table 1

Percentage Distributions and Mean Scores of Reenlistees (R) and Non-Reenlistees (N-R) on Aptitude Indexes

Standard Score	Mechanical		Clerical		Equipment Operator		Radio Operator		Technician Specialty		Services		Craftsman		Electronics	
	R	N-R	R	N-R	R	N-R	R	N-R	R	N-R	R	N-R	R	N-R	R	N-R
9	8.5	12.5	5.0	7.0	18.6	22.0	5.2	8.3	9.4	13.1	8.4	9.6	9.2	15.1	7.1	11.2
8	14.2	16.8	12.3	13.9	19.8	21.5	8.7	11.5	16.4	17.7	11.2	12.6	15.2	18.1	10.5	12.8
7	18.3	19.5	20.0	21.6	17.5	18.7	17.1	19.4	21.0	23.2	19.9	21.1	19.9	21.1	21.7	22.6
6	23.6	21.9	24.9	25.7	17.7	15.1	24.8	24.0	26.3	23.3	21.0	20.1	22.9	19.4	28.2	25.4
5	18.9	15.6	20.1	16.8	12.8	11.5	23.4	19.5	17.9	14.4	18.5	16.7	17.8	13.6	17.5	15.7
4	12.8	10.5	14.0	11.5	8.8	6.8	15.8	12.1	9.1	8.4	11.5	11.0	10.1	8.6	13.1	10.5
3	3.1	2.8	3.3	3.3	3.6	3.2	3.8	4.4	0.0	0.0	7.1	6.7	3.8	3.4	1.9	1.8
2	0.4	0.5	0.3	0.2	0.9	1.0	1.1	0.7	0.0	0.0	1.9	1.7	1.1	0.6	0.0	0.0
1	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.0	0.0	0.5	0.6	0.2	0.2	0.0	0.0
Mean Score	6.16	6.44	6.00	6.20	6.67	6.88	5.80	6.07	6.46	6.67	5.94	6.07	6.23	6.58	6.15	6.39

Table 2

Reenlistment Rate by Rank

Rank	Reenlistees	Non-Reenlistees	Reenlistment Rate
M/Sgt	3	0	100
T/Sgt	20	36	36
S/Sgt	1291	3551	27
A/1C	744	3038	20
A/2C	142	1124	11
A/3C	14	496	03
A/B	5	251	02
Total	2219	8496	21

Table 3

Reenlistment Rate by Army Area

	Army Area	Reenlistees	Non-Reenlistees	Reenlistment Rate
I	Northeast	258	1226	17.4
II	East Central	456	1695	21.2
III	Southeast	327	655	33.3
IV	South Central	210	535	28.2
V	Midwest	363	1575	18.7
VI	West	221	895	19.8
	Other	230	718	24.3

Table 4

Reenlistment Rate by AFSC and Job Family

AFSC Classification	Reenlistees	Non-Reenlistees	Reenlistment Rate
Technician Specialty			
20 Intelligence	17	39	30
22 Photomapping	10	71	12
25 Weather	19	91	177
27 Air Traffic Control & Warning	158	543	23
73 Personnel	43	118	27
96 Security (A.P.)	101	288	26
Other	11	65	14
Total Technician Specialty	359	1215	23
Mechanical			
36 Wire Maintenance	35	187	16
42 Aircraft Accessories Maintenance	46	181	20
43 Aircraft & Engine Maintenance	423	1406	23
46 Munitions & Weapons Maintenance	35	110	24
47 Vehicle Maintenance	26	133	16
Other	2	6	25
Total Mechanical	567	2023	22
Electronics Technician			
30 Radio and Radar Maintenance	178	1008	15
Other	4	18	18
Total Electronics Technician	182	1026	15
Craftsman			
53 Metal Working	20	99	17
55 Construction	13	46	22
56 Utilities	17	53	24
Other	4	31	11
Total Craftsman	54	229	19
Radio Operator			
29 Communications Operations	187	561	25

(Table 4 continues on next page)

Table 4 (continued)

AFSC Classification	Reenlistees	Non-Reenlistees	Reenlistment Rate
Equipment Operator			
95 Firefighting	16	35	31
99 Special Activities	37	112	25
Total Equipment Operator	53	147	26
Clerical			
64 Supply	180	468	28
70 Administrative	145	400	27
Other	12	50	19
Total Clerical	337	918	27
Services			
62 Food Services	91	241	27
Other AFSCs			
90 Medical	97	313	24
32 Armament Systems Maintenance	52	303	15
60 Transportation	36	150	19
74 Recreation Specialist	28	65	30
76 Band	10	52	16
Other	3	31	09
Grand Total	2056	7274	22

Table 5

Correlations Between Measures of Attitude and Background and Reenlistment

		r_{pbis}
Attitude Survey, Form A		
Operational Key (not developed for reenlistment prediction)		.15
Pattern Key (developed to predict reenlistment)		.13
Item 12. Intention to reenlist	(ø)	.10
Biographical Inventory, BE601B		
Key developed on sample in Electronics AFSCs		.13
Key developed on sample in Mechanical AFSCs		.15

Table 6

Correlations Between Aptitude, Rank, Army Area and Reenlistment

		r_{pbis}
Technician Specialty Aptitude Index		-.06
Mechanical Aptitude Index		-.07
Rank at End of Service		.18
Army Area: South vs. Non-South	(ø)	.12

Table 7

Reenlistment and Job Preference

	Number of Cases	Reenlistment Rate
Men whose first choice of job agrees with job assignment	182	21
Does not agree	418	22
Career counsellor's first recommendation agrees with job assignment	355	23
Does not agree	241	21